

c) REMARKS

The claims are 1-8, with Claims 1 and 5 being independent.

Reconsideration of the claims is respectfully requested.

Claims 5-8 were withdrawn as directed to a non-elected species. Since key features of claims 1 and 5 are identical, then if claim 1 is deemed allowable, claim 5 should be rejoined and allowed, together with the claims dependent thereon.

Claims 1, 3 and 4 were rejected under 35 U.S.C. § 102(b) as being anticipated by Takai, JP-08-97161 (Takai '161). Claims 1-4 were rejected as obvious over Takai '161 in view of Kawasaki '529.

Prior to addressing the grounds of rejection, Applicants wish briefly review key features and advantages of the present invention. An important feature of the present claimed invention is forming a deposited film on a substrate using a plasma CVD film-forming vessel while repetitively applying a periodicity voltage having at least two different waveform components having a different amplitude to an auxiliary electrode arranged either at a position in the plasma generation region of the film-forming vessel or on a side opposite a film-forming face of the substrate in the film-forming vessel. The disclosure of "ONE REPETITIVE CYCLE" includes applying a voltage waveform comprising at least two different waveform components having a different amplitude. This feature is also supported, inter alia, on page 22, lines 20-25; pages 57, lines 5-25 and page 73, lines 8 to page 74, line 16. In the present invention, the ONE REPETITIVE CYCLE is repeated. This enables one to efficiently dissociate the raw material gas to produce

precursors ( $\text{SiH}^*$ ,  $\text{SiH}_2^*$ ,  $\text{SiH}_3^*$ ,  $\text{H}^*$ , and the like) which contribute to forming a deposited film on the substrate at a high yield (see specification page 2).

Applicants have taught that a voltage lapse between adjacent peaks imparts amplitude (page 21, lines 20-22). Applicants have also distinguished direct current fields from periodic voltage having a waveform of a different amplitude. See page 28, line 4 and page 36, lines 8-23.

The Examiner argues Takai has a waveform component at 20-450 MHz and a DC bias voltage component. This is said to be the same as applying a periodicity voltage having two different waveforms having different amplitudes. That rejection is respectfully traversed.

Takai does not teach two different waveform components having a different amplitude. As admitted by the Examiner, a DC component is not a waveform. Applicants have distinguished DC voltage from periodic voltage of different amplitude on specification pages 26 and 36. Therefore, a periodically applied voltage having an AC component and a DC component is only equivalent to a periodic voltage having an AC component.

The defects of Takai are not remedied by Kawasaki. The present claimed invention applies the periodic voltage with different waveform components having different amplitude to an auxiliary electrode in the plasma generation region. See electrode 110 in instant Fig. 1. A separate discharge electrode 105 is opposed to the substrate. The auxiliary electrode is spaced within the plasma generated.

To the contrary, in Kawasaki, power is applied to electrode 5 which is below wafer 6 and not in discharge plasma space 7. In Figs. 11 and 12, a grid electrode 29

receives DC voltage, not a periodic voltage with different waveform components with different amplitude. Therefore, Kawasaki does not teach applying voltage to an auxiliary electrode in a plasma generation region of two different waveforms with different amplitude. There is no motivation to apply Kawasaki to Takai.

Wherefore, none of the references, whether alone or combined, disclose or suggest the present claimed invention nor render it unpatentable.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



---

Peter Saxon  
Attorney for Applicants  
Registration No. 24947

FITZPATRICK, CELLA, HARPER & SCINTO  
30 Rockefeller Plaza  
New York, New York 10112-3801  
Facsimile: (212) 218-2200

NY\_MAIN 441527v1